

REMARKS

The Examiner has rejected claims 1-12 and 19-25 under 35 U.S.C. 103(a) as being unpatentable over Zhao et al U. S. Patent No. 6,332,069 in view of Maeda et al U. S. Patent No. 6,352,222.

The Examiner states regarding claim 1 Zhao et al discloses essentially all the claimed invention as set forth in the instant application, further Zhao et al discloses an apparatus and method for grouping carriers to minimize the occurrence of call blocking in a satellite-based communications network. In addition, the Examiner states, Zhao et al discloses a method for operating a mobile satellite communication system having at least one gateway (124), at least one user terminal (134), comprising steps of: for a site to be protected from UT transmissions, specifying an exclusion zone having a confidence limit (which reads on service a particular zone of coverage of the spot beam so that signal burst can be transmitted more efficiently over the carriers between the satellite and access terminals, as disclosed in col. 4, lines 40-45) associated therewith; and selectively providing service to a (134) depending on a determined location of the UT relative to the exclusion zone (which reads on this spot beam coverage area is segregated into three offset zones, as disclosed in col. 15, lines 13-17) and on an estimated error (E) of the determined UT location (which reads on with 15 degree beam elevation angle, 5.3 degree satellite inclination angle and 50% beam coverage extension (due to beam pointing error and mobile terminal beam selection error), as disclosed in col. 15, lines 9-11). However, the Examiner submits, Zhao et al fails to specifically disclose the use of a constellation of satellites.

In the same field of endeavor, Maeda et al is said by the Examiner to disclose satellite, satellite control method and satellite communication system. In addition, according to the Examiner, Maeda et al discloses the use of a constellation of satellites as exhibited in Fig. 12 disclosed in col. 18, lines 31-53.

Therefore, the Examiner concludes it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zhao et al by modifying the position location system with a constellation of satellites as taught by Maeda et al for the purpose of controlling the trajectory by using the parameters.

Applicants respectfully submit that in Zhao et al U. S. 6,332,069 there is a disclosed an apparatus and method for use in a satellite-based communication network for minimizing blocking of communication between the network and access terminals resulting from differences in the signal propagation delays for the access terminals due to their different locations within a coverage area serviced by a spot beam generated by a satellite in the network. The apparatus includes a spot beam segregator which segregates a coverage area of the spot beam into at least one coverage zone based on the maximum

and minimum propagation delay experienced by access terminals within the coverage area of the spot beam. The apparatus further includes a carrier grouper which groups the carrier into a number of groups corresponding to the number of offset zones, and assigns each carrier group to a respective one of the coverage zones. The number of carriers assigned to each carrier group is proportional to the estimated number of access terminals located in the respective coverage zone to which the carrier group is assigned. The apparatus assigns a respective burst offset to each respective coverage zone so that signals being transmitted by the satellite and access terminals within the coverage zone are transmitted in accordance with the same burst offset. Accordingly, burst signals are arranged efficiently in the TDMA time frames being transmitted over the carriers between the satellite and access terminals, which therefore minimizes call blocking.

Applicants respectfully submit that in Maeda et al 6,352,222 there is disclosed "In order to establish the communication lines among the movable bodies and/or fixed stations and to configure communication system with a small number of satellites, present method has the steps of determining six orbit-related parameters by using input conditions including a geographical condition of the service area, a desired service time and the tolerance of an ascending vertical angle within which the satellite can be viewed from the service area, and establishing the satellite communication with one or more satellites, an individual satellite being arranged on the orbits selected and combined among plural elliptical orbits corresponding to the determined six orbit-related parameters on which the satellites stay for a sufficiently long time that they may come successfully into sight in the zenith direction."

Applicants respectfully submit that in Zhao et al col. 4, lines 40-45 there is disclosed "apparatus and method, for use in a satellite-based communications system, for minimizing call blocking in the network by grouping the carriers available to a spot beam into an appropriate number of groups which each service a particular zone of coverage of the spot beam, so that signal burst can be transmitted more efficiently over the carriers between the satellite and access terminals." Applicants respectfully contend that nowhere does this suggest, imply or disclose specifying an exclusion zone for a site to be protected from user terminal transmissions having a confidence limit (CL) associated therewith as required in the first element of claim 1. Further, in col. 15, lines 13-17 there is disclosed "Therefore, in accordance with the above equations, this spot beam coverage area is segregated into three offset zones. Hence, the traffic resource pool of carriers is divided into 3 carrier groups." This coupled with the recitation by the Examiner of col. 15, lines 9-11 where it is stated "inclination angle and 50% beam coverage extension (due to beam pointing error and mobile terminal beam selection error)" does little if nothing to cure the above recited deficiency as stated above and does not disclose, suggest or imply providing service to a user terminal depending on a determined location of the user terminal relative to the

exclusion zone on an estimated error (E) of the determined user terminal as required by the second element of claim 1.

Applicants respectfully disagree that Maeda et al is in the same field of endeavor as contended by the Examiner and further that in Fig. 12 and col. 18, lines 31-53 there is a disclosed an orbit arrangement in four orbit planes, including satellite 120a, 120b, 120c and 120d which are all arranged on separate orbits, respectively. These satellites have specified orbit, cycles, eccentricities, orbital inclinations and a specified perigee of 270 degrees. It is stated that there apogees may be located at a desired position above the Japanese territory and thus there is generally disclosed in this ongoing discussion an example of an orbit arrangement directed to services covering the whole Japanese territory. In addition to not curing the deficiency of the Zhao et al reference as recited above, Maeda et al is not seen to be in the same field of endeavor, having only satellite structures in common with the satellite recited in Zhao et al and further it is respectfully contended by Applicants that Maeda et al is not properly combinable with Zhao et al as proposed by the Examiner. In any event, Maeda et al in any combination with Zhao et al is ineffective to render claim 1 obvious under 35 U.S.C. 103 for the reasons cited above. Accordingly, Applicants respectfully disagree that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zhao et al by modifying the position location system with a constellation of satellites as taught by Maeda et al for the purpose of controlling the trajectory by using the parameters as contended by the Examiner.

The Examiner goes on to say regarding claims 2, 6, 8 and 9 that Zhao et al teaches everything claimed as applied above and directs Applicants to claim 1, however Zhao et al fails to specifically disclose the use of the exclusion zone specified to comprise at least one of a polygon that defines an area, a volume, or a surface. The Examiner goes on to state, in the same field of endeavor, Maeda et al discloses a satellite, satellite control method and satellite communication system. In addition, the Examiner contends, Maeda et al discloses the use of the exclusion zone which is specified to comprise at least one of a polygon that defines an area, a volume, or a surface (which reads on this as to form such as polygon that includes all the service areas, as disclosed in col. 10, lines 37-39).

Applicants respectfully submit that in Maeda et al col. 10, lines 37-39 there is disclosed "defined so as to form such a polygon that includes all the service areas. This polygon can be formed by plural adjoining triangles."

Applicants respectfully contend that the defined areas as set out in col. 10, lines 37-39 have no relationship to the exclusion zone as defined in claims 2, 6, 8 and 9 which are disclosed to be a polygon having various characteristics as in 2, 6 and 8 and the exclusion zone specified to comprise a volume defined by connected points on the surface of the

earth and at least point located above the surface of the earth as set out in claim 9. Applicants again respectfully submit that claims 2, 6, 8 and 9, depending from claim 1, are patentably distinguishable over Zhao et al and Maeda et al for the reasons recited above with regard to claim 1. Therefore, Applicants cannot agree it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zhao et al by modifying the position location system with the exclusion zone as specified to comprise at least one of a polygon that defines an area, a volume or a surface as taught by Maeda et al for the purpose of setting the initial value for the orbital inclination angle.

The Examiner goes on to state regarding claims 3-5 Zhao et al discloses everything claimed as applied above (referring Applicants to claim 1), in addition Zhao et al discloses a location of the UT (134) as determined by the UT (134), and transmitted to the GW (124) as disclosed in col. 8, lines 55-65.

Applicants respectfully submit that in Zhao et al col. 8, lines 55-65 there is disclosed "The process of segregating the coverage area 164 and allocating the carriers accordingly is carried out by a computer in a traffic control subsystem (TCS) in the gateway station assigned to the access terminal 134 placing the call. For example, if an access terminal 134 is at a location assigned to the primary gateway station site 104, the processing is performed by a computer in the TCS in gateway station 112. However, if an access terminal 134 is at a location assigned to national gateway station site 122, the processing is performed by a computer in the TCS in gateway station 124." Applicants respectfully submit that they are at a loss to understand how segregating the coverage area and allocating the carriers accordingly as defined in col. 8, lines 55-65 in any way teaches, suggests or implies determining the UT location by the UT and transmitting it to the GW as in claim 3, determining the UT location by the UT in cooperation with the GW as in claim 4 and determining the UT by the GW as in claim 5. Further, Applicants respectfully submit that claims 3-5 are distinguishable over the combination of Zhao et al and Maeda et al for the reasons cited above with regard to claim 1.

The Examiner states regarding claim 7 that Zhao et al discloses everything claimed as applied above and directs Applicants' attention to claim 1, in addition Zhao et al discloses the UT (134) is granted service if the value of E is less than CL as disclosed in col. 1, lines 27-36.

Applicants respectfully submit that in Zhao et al at col. 1, lines 27-36 as cited by the Examiner there is disclosed "More particularly, the present invention relates to an apparatus and method for minimizing such communication blocking by segregating the coverage area of the spot beam into at least one coverage zone, segregating the communication carriers available for the spot beam into a number of carrier groups corresponding to the number of coverage zones, and assigning to each carrier group a

"specific burst offset time period in accordance with which communication bursts are transmitted over carriers in the carrier group between the network and access terminals located within the coverage zone serviced by the carrier group." Applicants respectfully contend that nowhere in said recitation is there found the method allowing the UT to be granted surface service if the value of E is less than CL. The recited passage as stated relates to minimizing communication blocking by segregating the coverage zone incorporating a method completely distinguishable from that of the instant claim.

The Examiner goes on to state regarding claim 10 Zhao et al discloses everything claimed as applied above and refers Applicants to claim 1, in addition Zhao et al discloses the exclusion zone is specified to comprise a surface defined by at least two connected points on the surface of the earth and at least a point located above the surface of the earth as disclosed in col. 1, lines 27-36.

Applicants again respectfully contend that nowhere in col. 1, lines 27-36 is an exclusion zone specified to comprise a surface defined by at least two connected points on the surface of the earth and at least a point located above the surface of the earth as contended by the Examiner. Further, Applicants respectfully submit that claim 10 is patentably distinguishable over Zhao et al and Maeda et al for the reasons cited above with regard to claim 1.

The Examiner goes on to state regarding claims 11-12 Zhao et al discloses everything claimed as applied above and directs Applicants' attention to claim 1, in addition Zhao et al discloses boundaries of the exclusion zone are static as disclosed in col. 1, lines 27-36. Again, Applicants respectfully submit that nowhere in col. 1, lines 17-36 is there disclosed, suggested or implied that the boundaries of the exclusion zone are static as required in the instant claims. Further, claims 11-12 are distinguishable over Zhao et al and Maeda et al for the reasons cited above with regard to claim 1.

The Examiner goes on to state regarding claims 19-25 Zhao et al discloses everything claimed as applied above and directs Applicants' attention to claim 1, in addition Zhao et al discloses wherein there are overlapping exclusion zones specified, each having a different value of CL as disclosed in col. 1, lines 27-36. Again, Applicants respectfully submit that nowhere in col. 1, lines 27-36 of Zhao et al is there disclosed overlapping exclusion zones, each having a different value of CL as required by the instant claims. Further, claims 19-25 are distinguishable over Zhao et al and Maeda et al for the reasons cited above with regard to claim 1.

The Examiner has rejected claims 13-18 under 35 U.S.C. 103(a) as being unpatentable over Zhao et al in view of Maeda et al and further in view of Ishikawa et al U. S. Patent No. 5,969,669.

The Examiner states regarding claims 13-18 Zhao et al in view of Maeda et al discloses everything claimed as applied above and directs Applicants' attention to claim 1, however, Zhao et al in view of Maeda et al fails to specifically disclose the use of the value of E is a function of the accuracy of the UT local oscillator, and where information that specifies the accuracy of the UT local oscillator is stored in the UT.

The Examiner further contends that Ishikawa et al is in the same field of endeavor and discloses a method for determining position of mobile earth station in satellite communication system. In addition, the Examiner contends, Ishikawa et al discloses the use of the value of E is a function of the accuracy of the UT local oscillator, and where information that specifies the accuracy of the UT local oscillator is stored in the GW (which reads on it is possible to perform high accuracy position determination by estimating and compensating for the timing error arising from instability in the accuracy of the clock of the mobile earth station and the frequency error resulting from instability of the frequency oscillator of the mobile earth station, as disclosed in col. 6, lines 10-20).

Applicants respectfully submit that in Ishikawa et al there is disclosed a method for uniquely determining the position of a mobile earth station in a mobile satellite communication system which employs a non-geostationary satellite with a multi-spot beam. A given point of a preknown position on the earth surface is defined as the center coordinate of a three-dimensional coordinate axis, information on the measured distance and Doppler shift amount between a mobile earth station of an unknown position and a non-geostationary satellite is used to repeat the estimation of the position of the mobile earth station a plurality of times, thereby obtaining the position of the earth station with high accuracy. Furthermore, by observing the estimated positions of the mobile earth station obtained as a plurality of solutions at proper time intervals, comparing with one another the movements of the respective estimated positions occurring with the local time proceeds and selecting the estimated position of the minimum movement, the estimated position of the mobile earth station is uniquely determined relative to its true position.

In Ishikawa et al col. 6, lines 10-20 it is stated by using the information about measured distances and Doppler shift amounts between the mobile earth station and the non-geostationary satellite, which are measured at different local times, errors in time which are attributable to instability in the position of the mobile earth station and in the accuracy of the clock mounted in the mobile earth station and errors in frequency which result from instability of the frequency oscillator mounted in each mobile earth station can be estimated at the same time. By removing the factors responsible for these errors, it is possible to achieve high accuracy position determination of the mobile earth station.

Applicants respectfully contend that nowhere in this recitation in Ishikawa et al is there disclosed (1) that value E is a function of the accuracy of the UT local oscillator and

where information that specifies the accuracy of the UT local oscillator is stored in the UT as in claim 13, (2) the value of E is a function of the accuracy of the UT local oscillator and where information that specifies the accuracy of the UT local oscillator is stored in the GW as required in claim 14, (3) the value of E is a function of the accuracy of the UT local oscillator and where information that specifies the accuracy of the UT local oscillator is stored in a home GW of the UT and is transferred from the home GW to a serving GW when the UT is roaming as in claim 15, (4) where the value of E is a function of the accuracy of the UT local oscillator and where information that specifies the accuracy of the UT local oscillator is stored in or is determined by the UT and is transferred to the GW as required in claim 16, (5) where the UT is granted service if the value of E is less than CL and where the GW sets the value of CL to be less than a possible minimum value of E for excluding at UTs from operating within the exclusion zone as required by claim 17, and (6) where service is granted if the value of E is less than CL and where the GW sets the value of CL to be greater than a possible maximum value of E for enabling all UTs to operate within the exclusion zone as required by claim 18. Further, Applicants respectfully submit that claims 13-18 are distinguishable over Zhao et al, Maeda et al in any combination and further combined with Ishikawa et al in any combination for reasons stated above.

Therefore, Applicants respectfully disagree that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Zhao et al by modifying the position location system with the use of the value E as a function of the accuracy of the UT local oscillator and where information that specifies the accuracy of the UT local oscillator is stored in the UT as taught by Ishikawa et al for the purpose of determining the estimated position of the mobile earth station relative to its true position as contended by the Examiner.

Applicants gratefully acknowledge the indicated allowability by the Examiner of claim 26 and the basis for the allowability of claim 26 as set out by the Examiner relating to the prior art of record lacking in the combination as set forth in said claim including one gateway, user terminal, constellation of satellites, GW as specified for controlling operations of the UT, interface to the PSTN or to the Internet, the GW storing a database containing at least one of a Confidence Polygon, a Confidence Volume, or a Confidence Surface to establish a geometric shape located on the earth.....a variable Confidence Limit value that is compared to a value of an error (E) in a position location of the UT, said controller acting upon the database and assigned or derived values of CL and E..... whereby the UT is forbidden or allowed to access the mobile satellite system or to make or receive a call or depending on the operational mode of the GW the result of the comparison affects some operational characteristic of the UT to provide an ability to protect a site from UT emissions.

The Examiner goes on to state that the prior art of record provided numerous teachings of methods for call blocking in a satellite based network; however, the prior art failed to specifically disclose to determine if a comparison of CL and E, combined with a current position of the UT, yields a certain result according to the operational mode of the GW controller, wherein depending on the operational mode of the GW the result of the comparison affects control of the UT or an external device attached to the UT, whereby the UT is forbidden or allowed to access the mobile satellite system or to make or receive a call depending on the operational mode of the GW the result of the comparison affects some operational characteristic of the UT to provide an ability to protect a site from UT emissions.

Applicants respectfully submit that in view of the above remarks all of the claims presently under prosecution have been seen to be patentably distinguishable over the prior art of record, Zhao et al, Maeda et al in any combination and further in view of Ishikawa et al with regard to claims 13-18. Applicants respectfully request that this application be reviewed and reconsidered in view of the above remarks and that a Notice of Allowance be issued at an early date.

Respectfully submitted,



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